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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/681,937	10/09/2003	Chan-Soo Hwang	678-1109 (P10973)	7758

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THE FARRELL LAW FIRM, P.C.  
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UNIONDALE, NY 11553

EXAMINER
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ETTEHADIEH, ASLAN

ART UNIT	PAPER NUMBER
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2611

MAIL DATE	DELIVERY MODE
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07/24/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/681,937	<b>Applicant(s)</b> HWANG ET AL.	
	<b>Examiner</b> Aslan Ettehadieh	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 24-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☒ Claim(s) 4-23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |  |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                      | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 06/11/2007 have been fully considered but they are not persuasive.

2. Applicant's arguments regarding claims 1 – 3, *The obviousness-type double patenting (ODP) should be withdrawn:*

"If 'provisional' ODP rejections in two applications are the only rejections remaining in those applications, the examiner should withdraw the ODP rejection in the earlier filed application thereby permitting that application to issue without need of a terminal disclaimer."

Contrary to applicant's assertion, examiner likes to point to the same passage:

"If 'provisional' ODP rejections in two applications are the only rejections remaining in those applications, the examiner should withdraw the ODP rejection in the earlier filed application thereby permitting that application to issue without need of a terminal disclaimer."

The prior art rejections are maintained and thus the ODP remains.

3. Applicant's arguments regarding claims 1 – 2, *Boariu does not disclose a transmission coding matrix having at least two columns orthogonal to each other.*

Contrary to applicant's assertion, Borariu discloses a transmission coding matrix having at least two columns orthogonal to each other (col. 1 line 42 disclose column matrices and col. 2 lines 35 – 40 discloses those vectors are orthogonal; and col. 5 lines 37 – 42 disclose columns correspond to antennas, col. 7 lines 23 – 25, col. 8 lines 13 – 15, 33 – 35

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disclose orthogonal transmit diversity; and col. 10 lines 20 – 24 disclose space time block coding and col. 12 lines 28 – 50 disclose space time coding using OFDM).

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1 – 3 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 7 and 8 of U.S. Patent No. 10/691903.

Although the conflicting claims are not identical, they are not patentably distinct from each other because it would have been obvious to one skilled in the art at the time of invention was made to have three antennas for achieving antenna transmit diversity in order to do exactly what is stated, transmission diversity. Antenna diversity has many benefits, included but not limited to selecting the antenna with the best signal thus providing more accuracy, the added capacity of multi-carrier transmission, higher data

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rate, higher throughput, etc. Also, proving all the functions in claims 1, 7 and 8 will thus provide maximized diversity gain.

5. Claims 1 – 3 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 6 and 8 of U.S. Patent No. 10/692894. Although the conflicting claims are not identical, they are not patentably distinct from each other because it would have been obvious to one skilled in the art at the time of invention was made to have three antennas for achieving antenna transmit diversity in order to do exactly what is stated, transmission diversity. Antenna diversity has many benefits, included but not limited to selecting the antenna with the best signal thus providing more accuracy, the added capacity of multi-carrier transmission, higher data rate, higher throughput, etc. Also, proving all the functions in claims 1, 6 and 8 will thus provide maximized diversity gain.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boariu et al. (US 6865237) in view of Papadias et al. (US 2003/0174782).

7. Regarding claim 1, Boariu discloses a transmitter for transmitting modulation symbols in a wireless communication system, comprising: a plurality of transmit antennas for achieving transmit diversity (figure 3, abstract, col. 1 lines 21 – 26); and a transmission coding matrix generator for producing a plurality of symbol combinations

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with a plurality of input symbols to transmit the input symbols once from each transmit antenna at each time period (figure 3, abstract, col. 5 lines 37 – 55), forming a transmission coding matrix with rows corresponding to transmission time periods and columns corresponding to transmit antennas from the symbol combinations, and outputting the symbol combinations to the transmit antennas at a plurality of times (figure 3, abstract, col. 5 lines 37 – 55), the transmission coding matrix having at least two columns orthogonal to each other (col. 2 lines 9 – 40, col. 6 lines 18 – 23, col. 7 lines 1 – 26, col. 8 lines 33 – 38, col. 12 lines 29 – 49) and the symbol combinations having as elements the input symbols, the inversions and conjugates of the symbols (col. 5 lines 5 – 48), and symbols obtained by rotating the phases of the symbols once by a phase value to maximize a diversity gain (col. 10 lines 20 – 24, col. 41 lines 33 – 38). Boariu is not explicit about symbols obtained by rotating the phases of some of the symbols once by a predetermined phase value.

In the same field of endeavor, however, Papadias discloses symbols obtained by rotating the phases of some of the symbols once by a predetermined phase value (figures 4 – 7, paragraphs 36, 42).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use symbols obtained by rotating the phases of some of the symbols once by a predetermined phase value as taught by Papadias in the system of Boariu to reduce the bit error rate (paragraph 5).

8. Regarding claim 2, Papadias further discloses an encoder for generating a transmission coding matrix with four rows and four columns from four input symbols, and the inversions and the conjugates of the four symbols (figures 4 – 7, paragraphs 36,

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42); and at least two phase rotators for selectively rotating the phases of symbols in at least two of the columns of the transmission coding matrix by the predetermined phase value (figures 4 – 7, paragraphs 36, 42).

***Allowable Subject Matter***

9. Claims 3 – 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Other prior art cited***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Kuchi et al. (US 2002/0172293) discloses limitations found in claims 1 – 2 (figures 1 – 3, 7 – 8, 11 – 12, paragraphs 1, 5 – 6, 8 – 9, 28 – 30).

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aslan Ettehadieh whose telephone number is (571) 272-8729. The examiner can normally be reached on Monday - Friday, 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Aslan Ettehadieh  
Examiner  
Art Unit 2611

AE

  
DAVID C. PAYNE  
SUPERVISORY PATENT EXAMINER